

provides an independent flexibility, and the combination of the sections 31 provide the desired flexibility for insertion into an outer cannula. Each disc 29 is mounted so as to traverse the direction of rod 31. The cylindrical flat discs 29 essentially match the interior diameter of the outer cannula into which obturator 20 is to be fitted. There should be sufficient space between the outer peripheries of discs 29 and the interior wall of the outer cannula.

FIG. 5 provides another shaped outer cannula supporting body. In this case, a sectionalized rod 31, as in FIG. 4, is affixed to the handle at one end and another section to the tip at the other end. Instead of discs, this design uses spaced apart sectionalized cylinders 33 to support the obturator wall. FIG. 6 uses spaced apart oblong spacers 35; FIG. 7 uses spaced apart spherical spacers 37; and FIG. 9 uses sets of spaced apart parallel fins 39 mounted around rod 31 at 120° angles.

FIG. 10 illustrates, by a cross-sectional view, a schematic version of the preferred obturator of FIGS. 1-3, nestled in an outer cannula 14 containing tapered distal end 17 that terminates at the distal opening of the outer cannula 14. The combination of tapered end 17 and the smooth curved surface of the tip 15 of the obturator allows a non-abrasive insertion of the outer cannula containing the obturator into a trachea opening and the trachea. Where the outer cannula is made of a flexible plastic, the combination of an outer cannula with a tapered distal end and the rounded bullet-like tip of the flexible obturator of the invention allows easy introduction of the tracheostomy tube into the trachea.

The outer cannula may be made of conventional materials such as polyvinyl chloride, polyethylene, polypropylene, and the like plastics. However, owing to the flexibility that can be incorporated into a tracheostomy tube because of the reinforcing and flexing capabilities of the obturators of the invention, it is desirable to make the outer cannula of a flexible plastic, such as more highly plasticized polyvinyl chloride (typically comparable to the plasticized PVC used for making an inner cannula. Other flexible plastics may be employed, such as polyurethane elastomers, polybutene elastomers, ABS elastomers, and the like.

We claim:

1. A plastic obturator suitable for use in a tracheostomy tube comprising a handle at its proximal end, a bullet shaped

tip at its distal end, and an outer cannula supporting body between the handle and the tip, which outer cannula supporting body contains sectionalized flex points and sectionalized laterally extending supporting surfaces along its length; wherein the laterally extending supporting surfaces are provided by a series of alternating flat discs positioned at different angles and one or more sets of alternating flat discs provide the sectionalized flex points.

2. The plastic obturator of claim 1 wherein the distance across the laterally supporting surfaces is approximately the inner diameter of a tracheostomy tube into which the obturator is usable.

3. The plastic obturator of claim 1 wherein the laterally extending supporting surfaces contain grooves in them.

4. The plastic obturator of claim 1 wherein the alternating flat discs are arranged along a longitudinal axis of the obturator and present edges that extend laterally of the axis.

5. The plastic obturator of claim 4 wherein the thickness of the flexible discs providing the flex points allows the obturator to be flexed upon entry to an outer cannula.

6. The plastic obturator of claim 4 wherein the discs contain grooves within their outer flat surfaces.

7. The plastic obturator of claim 4 wherein each adjacent disc is aligned about ninety degrees from the other.

8. A tracheostomy tube containing a plastic obturator, said plastic obturator comprising:

a handle at its proximal end;

a bullet shaped tip at its distal end; and

an outer cannula supporting body between the handle and the tip, which outer cannula supporting body contains sectionalized flex points and sectionalized laterally extending supporting surfaces along its length; wherein the laterally extending supporting surfaces are provided by a series of alternating flat discs positioned at different angles and one or more sets of alternating flat discs provide the sectionalized flex points.

9. The tracheostomy tube of claim 8 wherein the inner diameter of said tracheostomy tube is roughly equivalent to the outer diameter of said laterally extending supporting surfaces.

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